The Alaska Energy Policy Task Force

Created by the 23rd Alaska Legislature

Legislative Resolve No. 24, 2003

Task Force Members

Mike Barry, Chair
AIDEA/Alaska Energy Authority
Chairman of the Board

H.A. Red Boucher
Vice Chair
Alaska Wireless Technology
Chugach Electric Association
Board Member

Tom Boutin
Alaska Department of Revenue
Deputy Commissioner

Dave Carlson
Southeast Conference
Intertie Coordinator

Wayne Carmony
Matanuska Electric Association
General Manager

Rick Eckert
Homer Electric Association
Interim General Manager

Steve Haagenson
Golden Valley Electric Association
President/Chief Executive Officer

Meera Kohler
Alaska Village Electric Cooperative
President/Chief Executive Officer

Robert Wilkinson
Copper Valley Electric Association
Chief Executive Officer

Staff Coordinators

Becky Gay, **Legislative Staff**
Speaker of the House Pete Kott
Senate President Gene Therriault
269-3024 *bgay@aidea.org*

Bernie Smith
AIDEA/Alaska Energy Authority
269-4643 *bsmith@aidea.org*

Photo by Yutaka Suzuki, AK Division of Tourism

Headquartered at AIDEA/Alaska Energy Authority
813 W. Northern Lights
Anchorage, AK 99503
907-269-3000
Fax: 269-3044
http://www.aidea.org/EnergyTaskForce.htm
In State toll free: 1-888-300-8534

Table of Contents

Legislative Directive……2
Findings and Recommendations - Railbelt
- **I. Long-term energy plan to enhance economic future……..…..3**
- **II. Current and long-term energy needs……..7**
- **III. State-owned energy assets……10**
- **IV. Industry and government actions needed……..12**
- **V. Other……..14**

Acknowledgements……16
Glossary……17

Appendices
APPENDIX A
Process and Appointments of Task Force Members……...20
APPENDIX B
Authorizing Legislation - HCR 21.....……..22
APPENDIX C
Current Railbelt Projects.....…..24
APPENDIX D
Long-term Railbelt Projects.....……25
APPENDIX E
Load, Generation and Transmission details (2002)……26

Legislative Directive

In the first session of the 23rd Alaska State Legislature, the Energy Policy Task Force (EPTF) was established by concurrent resolution to:

1. **Develop a long-term energy plan to efficiently enhance Alaska's economic future.**

2. **Review and analyze the state's current and long-term energy needs.**

3. **Consider how best to incorporate state-owned Railbelt energy assets as part of the solution for the Railbelt's current and long-term electrical needs.**

4. **Address elements of Alaska's long-term energy needs that can be solved through action on the part of industry and/or government actions, such as pooling and integrated resource planning.**

Final findings regarding a Railbelt energy plan were to be reported to the legislature by December 31, 2003. Reports of task force findings for non-Railbelt areas shall be submitted by March 31, 2004.

I. A LONG-TERM ENERGY PLAN TO ENHANCE ALASKA'S ECONOMIC FUTURE

A. Vision Statement

Alaska holds a worldwide leadership role in energy supply, delivery and use solutions and environmental stewardship. Alaska will have reliable, economic, sustainable and secure power supplies for its citizens.

B. Mission Statement

Electricity is essential to meeting Alaska's economic, environmental, and educational development goals. The State will conduct its activities affecting energy in such a manner as to:

- **Promote reliable and secure electric power systems**
- **Promote the lowest cost for consumers**
- **Stimulate the economy**
- **Provide employment opportunities for Alaskans**
- **Improve the quality of life for all Alaskans**
- **Promote workforce development, including training Alaskans, for Alaska's utility sector.**
- **Enhance the State's social, cultural, economic and environmental assets**

C. Goals (Listed in no particular order)

- Promote unified operation of Railbelt generation and transmission system.
- Develop Alaska's position as a leader in competitively priced and reliably available electricity.
- Develop Alaska's electrical infrastructure while maintaining competitively priced energy.
- Ensure security of physical and cyber energy infrastructure.
- Promote research, development and demonstration of clean and renewable energy technologies.
- Promote conservation and energy efficiency across all of Alaska.
- Develop Alaska as a world leader in using and exporting competitively priced and reliably available fossil fuels
- Ensure standardized and consistent permitting and regulatory processes.
- Establish Alaska as a national leader in developing energy projects using its natural resources, including its workforce.

D. Recommendations

1. Workforce

Provide proper and focused workforce training to meet the challenges of 21st century energy industries.

Executive:

Perform an assessment of the opportunities for Alaska workers in the resource development and energy sectors and, based upon these opportunities, examine the deployment of a portion of its resources toward training and retraining of the workforce in these sectors.

Amend Department of Labor/Workforce Development (DOL/WD) regulations to facilitate the ability to develop training and internship programs with an emphasis on jobs for Alaskans.

Fund education to ensure that Alaska workers have the education and skills required to maintain energy's role in our economy.

Update certificate of fitness requirements for utility linemen to enhance workforce availability and better track the successful practices of the other 49 states.

Ensure that Alaska workforce regulatory practices conform to national practices.

Private Sector:

Work with the DOL/WD in its assessment of opportunities for the Alaska workforce in the energy and utility sectors.

Maximize internship programs that will allow entry into the Alaskan workforce.

Encourage development of new energy and energy related businesses in Alaska.

2. Energy Generation

A recent draft Railbelt Energy Study (RES) indicates that electric power generation needs of the Alaska could grow by 39 percent from 2008 to 2028. During that time, reliance on fossil fuels could grow by 90 percent, while emissions per kilowatt-hour of generation are reduced. The RES shows there is a surplus of power generation capacity on the Kenai Peninsula, with deficiencies projected in other areas of the Railbelt. Alaska must be active in its pursuit of developing new generation technologies to improve the efficiencies of present and future energy generation facilities and must be self-sufficient due to the lack of any electrical interconnections outside of Alaska

Assist the private sector in its efforts to develop energy generation capacity.

Executive:

Examine the ability of public bodies, including the Alaska Energy Authority (AEA), to assist the private sector in efforts to develop adequate energy generation capacity funded through conduit bonds and grants to keep the energy costs low for all Alaskans.

Utilize Alaska's abundant renewable resources in the production of hydrogen.

Executive:

Convene a workshop to discuss the potential for Alaska's leadership in hydrogen production. Such a workshop could serve as an educational tool and a platform for discussion between public, university research and private sector individuals and organizations.

Direct the University of Alaska and executive agencies to inventory ideal locations for future renewable energy generation sites that could be used as a source of hydrogen for in-state use and export.

3. Energy Infrastructure

The Task Force's goals and strategies focused on matters including, but not limited to: (1) infrastructure; (2) transmission and distribution; and (3) economic efficiency. As the electrical system ages, increased concerns about reliability and stability and needs for technology-driven system improvements will be required. In addition, the long-range need for a hydrogen-based infrastructure to support fuel cell technologies provides yet another opportunity for expansion in energy infrastructure. There must exist within the State the capacity to deliver resources and energy to end-users, whether within or outside of the State's boundaries.

Stimulate private-sector participation in its energy infrastructure to allow greater energy export capability to meet state, regional, and national energy demands.

Executive:

Provide tax-exempt bonding to fund projects, much like the Bradley Lake Hydroelectric financing model, with the State retaining only the obligations that cannot be transferred to the participating utilities.

Through AIDEA/AEA, support and encourage the formation of a Railbelt unified operations model that would operate in a consolidated manner and allow the most Alaskans to benefit from projects funded through the use of tax exempt financing.

Work with Alaska's Congressional delegation to provide financing or economic incentives to promote energy infrastructure development.

Encourage Railbelt utilities to establish a unified system by providing incentives such as conduit financing for Railbelt infrastructure.

Encourage adequate transmission infrastructure to increase economic development activity.

Conduct an assessment to identify the State's energy infrastructure security needs.

Executive:

The RCA should include in their deliberations the issue of cyber-security.

Private Sector:

Continue in the joint planning process to identify the State's energy infrastructure needs.

Encourage adequate and secure transmission infrastructure to increase economic development activity.

Continue to promote adequate fuel delivery infrastructure.

Assess the potential for the development of a locality into a sustainable energy community that utilizes novel distributed and/or renewable energy systems for residences and commercial enterprises.

Executive:

Examine the potential for the development of an Alaska locality into a sustainable energy community.

Legislative:

Examine opportunities to provide support for the development of such a community.

Alaska regional transmission planners should work to become leaders in energy infrastructure development.

Private sector:

Establish energy infrastructure development projects that will promote the reliable transportation of electricity throughout Central and Interior Alaska, both on and off the Railbelt system, that meets the State's energy, environmental and economic needs.

Define and establish a unified system operator for the Railbelt.

4. Regulatory

Streamline all licensing, permitting, and regulatory processes of energy projects.

Executive:

Review agency practices regarding the licensing, permitting, and regulatory processes of energy projects. These agencies could also review the licensing, permitting, and regulatory processes of energy projects in other states so as to develop a study of best practices regarding these issues.

Establish and maintain regulatory processes that are consistent and have defined processing timelines and encourage utilities to maintain long-term financial health.

Legislative:

Enact appropriate legislation for the implementation of best practices regarding the licensing, permitting, and regulatory processes of energy projects.

Private sector:

Provide input to the Executive and Legislative Branches to implement best practices regarding licensing, permitting, and regulatory processes of energy projects.

II. CURRENT AND LONG-TERM ENERGY NEEDS

A. Current Energy Needs

Findings

The electrical needs of the Railbelt are currently served by six utilities, consisting of four cooperatives and two municipal utilities. These are Golden Valley Electric Association (GVEA), Chugach Electric Association (CEA), Matanuska Electric Association (MEA), Homer Electric Association (HEA), Anchorage Municipal Light & Power (ML&P) and the City of Seward Electric System (SES). These utilities, along with state-owned assets, serve roughly 75% of Alaska's population and account for over 85% of the electricity generated in the state. The Railbelt grid, spanning from Homer to Fairbanks, is not connected to other parts of Alaska, to the grid in Canada nor to the 48 contiguous states. Power can neither be imported nor exported. Because it is unacceptable to come up short in arctic conditions, reserve requirements are higher than in the rest of the country.

Railbelt Generation: In 2002, total generating capacity was about 1,374 MW. Generation is fueled by natural gas (67%), coal (5%), hydro (15%), and fuel oil (13%.) All of the electricity is produced by the six utilities or purchased from the State (Bradley Lake hydro) or Aurora Energy, which is an investor-owned coal-fired plant in Fairbanks. The oldest thermal units were installed in the early 1960s. Most of the thermal generation is considered aged and may need to be replaced within the next decade or so. See Appendix E.

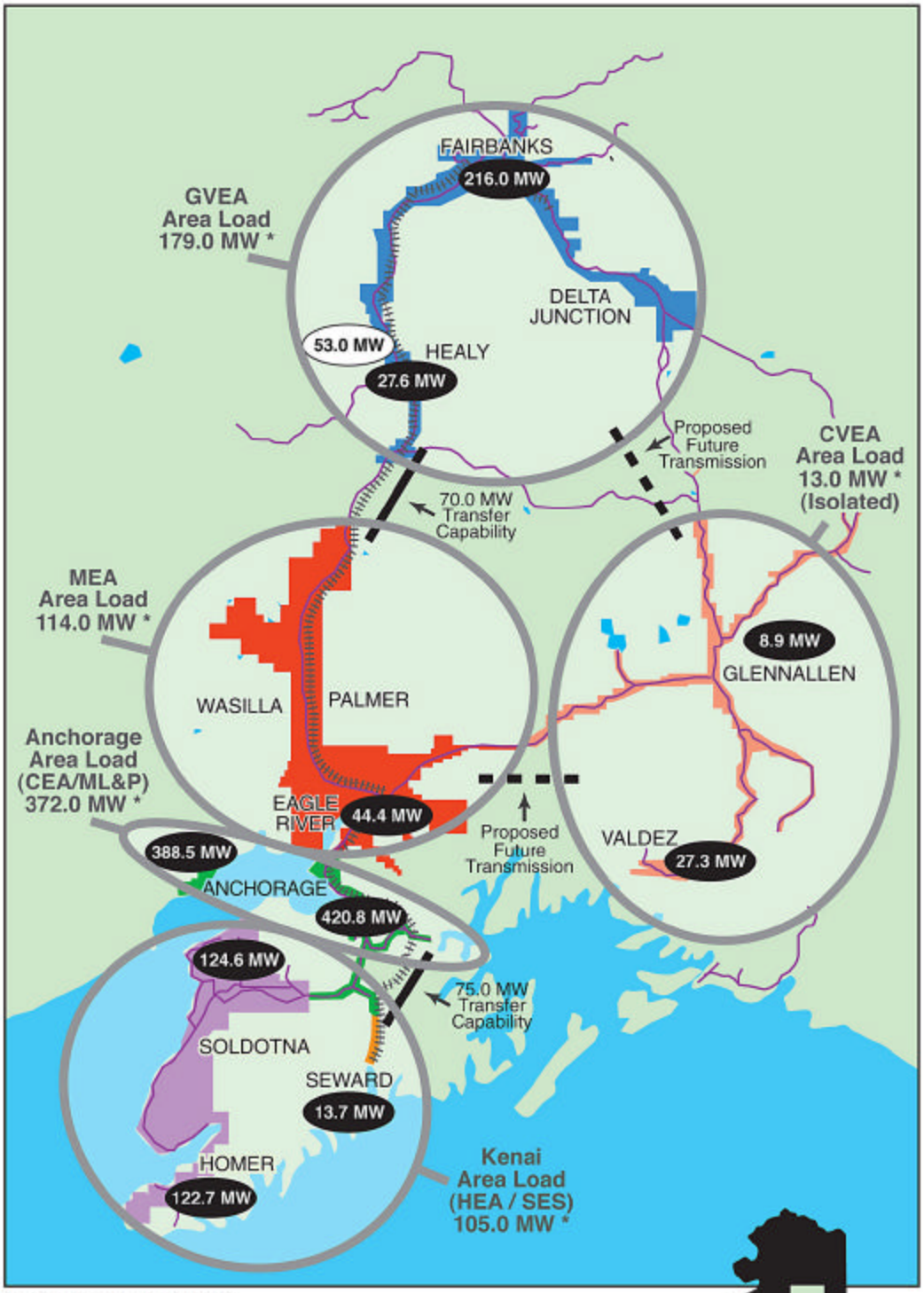
Railbelt Load: In 2002, total peak load was 721 MW. See Appendix E.

Railbelt Transmission: There are two main transmission interconnections in the Railbelt. The Anchorage to Fairbanks Intertie, a 300-mile transmission system that operates at 138kV, is composed of segments owned by MEA, CEA, AEA and GVEA. The other is the Anchorage to Kenai area transmission line, owned by HEA and CEA, and operated at 115kV. Transfer capacity on both lines is limited to approximately 70 MW. See Appendix E.

B. Current Railbelt Projects

For details see Appendix C. A road/rail map showing current loads and generation capacity, with transfer limitations noted between load centers, follows. Dotted lines indicate transmission that is needed, but not built.

RAILBELT LOAD CENTERS



* Indicates peak load for 2002

Sources: Alaska Systems Coordinating Council, 2002 Coordinated Bulk Power Supply Report (Department of Energy EIA-411), May 23, 2003; Railbelt Energy Study, 2003; Copper Valley Electric Association

XX.X MW - Area Generation Capacity Available

53.0 MW - Healy Clean Coal Plant

C. Long-term Energy Needs

Findings

The Task Force adopted the definition of long-term as 20 years or more. The energy requirements of the Railbelt are expected to increase 39% over that time. Certain needs emerged from Task Force discussions and public testimony. Within the next 20 years, it was determined that Alaska needs to:

- **Create secure and reliable transmission between load centers**
- **Provide energy infrastructure for economic development**
- **Identify and evaluate long-term fuel sources**
- **Establish a unified system operation**
- **Connect new areas to the Railbelt grid**
- **Replace aging generation**
- **Replace an aging workforce**

D. Recommendations

Specific recommendations of how to fulfill future needs were as follows:

- Structure implementation of a unified Railbelt system operator.
- Support increased vocational trade schools, higher education and training of technical and professional utility career staff and management.
- State grants or financing should give priority to unified Railbelt system operation and expanding the grid along the road system, i.e., the "Roadbelt."
- Where common projects are identified as the most cost effective energy solutions, encourage financial risk sharing among utilities through a model similar to the Bradley Lake Project agreement.
- Increase the proportion of renewables in long-term fuel sources. Renewables include hydroelectric generation.
- Loop the existing Railbelt energy grid to improve system reliability and serve new markets. See map for details.
- Advance the physical and cyber security of the critical electrical infrastructure in Alaska.
- Strive to have nationally competitive electrical rates.

E. Long-term Railbelt Projects

For details see Appendix D.

III. STATE-OWNED RAILBELT ENERGY ASSETS

Findings

The Task Force supports the transfer of AIDEA/AEA electrical assets in a manner that recognizes existing contracts. Current state ownership of energy assets should be transferred to a Unified System Operator to support the cooperation of the utilities in that endeavor. The Task Force recommends the state should provide financing through AIDEA/AEA to assist development of future generation and transmission. Through AIDEA/AEA, the State owns three Railbelt energy assets, as follows:

A. The Bradley Lake Project

The Bradley Lake Project is located in south central Alaska at the southern end of the Kenai Peninsula. The project includes a 610-foot long, 125-foot high concrete-faced and rock-filled gravity dam, a 3.5-mile power tunnel and steel-lined penstock. The project transmits power to the state's main power grid via two parallel 20-mile transmission lines. The project, which cost approximately $328 million (including reserve fund balances), went into commercial operation in 1991. Homer Electric Association under contract with AEA now operates the project. Bradley Lake serves Alaska's Railbelt from Homer to Fairbanks as well as the Delta Junction area. The Bradley Lake Project Management Committee oversees operation and maintenance duties.

B. Alaska Intertie

The 170-mile transmission line that runs approximately between Willow and Healy is the state-owned portion of the 300-mile Anchorage to Fairbanks transmission system. It is rated at 345 kV and operates at 138 kV. The Intertie allows GVEA to purchase lower cost energy from Anchorage and the Kenai generated from natural gas and the Bradley Lake hydroelectric project. CEA and ML&P generate revenue from the sale of economy energy to GVEA. The Intertie Operating Committee oversees operations and maintenance duties.

C. Healy Clean Coal Project (HCCP)

The Healy Clean Coal Project grew out of a nationwide competition sponsored by the U.S. Department of Energy (DOE) to test new technologies aimed at solving the international problem of acid rain. Alaska was one of 48 applicants selected for 13 grants. The project is located adjacent to GVEA's existing Healy No. 1 power plant, which was constructed in 1967. General construction of the power plant began in May 1995 and was completed on November 21, 1997. A 90-day test of the power plant was completed in December 1999. HCCP has been idle since the completion of that test. After several engineering studies, AIDEA continues to pursue all options for getting HCCP into operation and selling power

as soon as possible. AIDEA and GVEA Boards have mutually agreed to focus on getting the HCCP up and running.

D. Recommendations

- Provide Railbelt utilities the opportunity to obtain grants and tax-exempt financing for electrical infrastructure that provides the lowest cost of power to members and efficient operation.
- All other considerations being equal, projects should in general not be owned, operated or maintained by the State. The State should encourage Railbelt utilities to accept ownership of state-owned Railbelt energy assets to reduce bureaucracy, thereby reducing state expenses and offering utilities the benefits of long-term ownership.
- Any divestiture of state-owned Railbelt energy assets should be consistent with the above.
- Future grants and financing should give priority to Railbelt projects endorsed by the Railbelt unified system operator.

IV. INDUSTRY AND /OR GOVERNMENT ACTIONS

Findings

To efficiently energize Alaska's economic development, the Task Force believes that the Railbelt utilities should develop a unified system operation. If there are legislative or regulatory issues, utilities should work cooperatively to determine actions needed to implement the unified system details. Different forms of unified systems operations may be used by the various utilities. The Task Force proposed the following examples.

A. Unified System Operations

Power Pooling:

Definition: "Two or more interconnected electric systems planned and operated to supply power in the most reliable and economical manner for their combined load requirements and maintenance program."
Source: Edison Electric Institute
Power pooling systems are usually set up in one of two ways; a member of the system takes on the role of the system operator or an independent operator is established. Power pools allow for better utilization of resources to meet the aggregated load. Better utilization of resources leads to lower production costs and more economical capital improvement plans. Power pools inherently share knowledge, which if transition to competition is imminent, will help smooth the process and automatically create a more level playing field.
Source: R.W. Beck Railbelt RES Scope of Work
The greatest benefit from a power pool assumes the utilities jointly meet capacity requirements and jointly dispatch as if they were one utility.

Joint Action Agency (JAA):

Defined in AS 42.45.300 as "Two or more public utilities may form a joint action agency for the purpose of participation in the design, construction, operation, and maintenance of a generating or transmission facility and to secure financing for carrying out the design, construction, operation, and maintenance of the facility. A JAA may request AIDEA to issue revenue bonds for projects of the agency. A joint action agency has the powers of a public utility under AS 42.05." The statute broadly defines "public utilities"—includes any corporation or cooperative that owns, operates, manages, or controls any plant, pipeline, or system for furnishing, by generation, transmission, or distribution, electrical service to the public.

Generation &Transmission Cooperative (G&T):

A G&T is a cooperative organization comprised of one or more utilities that plan, operate and maintain G&T facilities for the benefit of the member utility systems. The G&T governing board consists of members from each member utility. It is owned by several distribution utilities to provide for their power

supply needs, including in some cases ownership of generating plants and transmission lines. This is the method of unified operation that is most commonly employed by distribution cooperatives across the United States.

B. Other Tools

Integrated Resource Planning (IRP):

The National Energy Policy Act (NEPA - 1992) defined integrated resource planning and directed states to use that process as the starting point. “The term 'integrated resource planning' means a planning process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources, in order to provide adequate and reliable service to electric customers at the lowest system cost."

V. OTHER TOPICS FOR FUTURE CONSIDERATION

Findings

The Task Force either touched on these subjects or found it did not have sufficient time to address these and form valid recommendations for the Legislature under the deadline given.

A. Critical Infrastructure Protection (CIP)

Homeland security efforts to list priority infrastructure includes the utility assets. Utility groups and representatives from associated sectors such as telecommunications must continue to cooperate to provide reliable power with due regard for changing demands of security.

B. Energy Efficiency, Conservation and the Environment

Efforts to use energy resources more efficiently can reduce energy costs and benefit the environment. Energy efficiency is broader than simple energy conservation, or eliminating unnecessary energy use. Efficiency involves achieving necessary goals, while minimizing energy requirements. Efficiency should not compromise comfort, performance or productivity, but rather meet those requirements through more proficient means. Environmental benefits are direct; if energy use is avoided, then the environmental impacts are avoided as well.

C. Emerging Energy and Environmental Technologies

Examine the establishment of public/private partnerships that benefit Alaska research institutions and commercial enterprises that engage in the commercialization of energy and environmental technologies.

D. Renewable Energy

Renewable power can be competitive. There are a number of technologies considered renewable and these include: hydroelectric, solar, biomass, geothermal, tidal and wind.

Solar, biomass, geothermal and tidal are in various stages of technological development and do not currently contribute, to a great extent, to the national energy supply. Solar at this time is expensive and because of Alaska's latitude isn't considered a likely candidate for large-scale energy production. There are some geothermal resources in the state. The closest geothermal site to the Railbelt is approximately 10 miles west of Chugach Electric's Beluga Power Plant. Tidal power is still early in its development and being studied as a potential resource in conjunction with a Knik Arm crossing. As with other technologies, tidal power is developing and it will be some time before it becomes a significant and competitive generation resource. However it is

prudent for energy planners to continue to monitor the development of this technology.

Wind power is being studied as a potential renewable generation resource for the Railbelt. The technology is the beneficiary of more than 20 years of intense research and development. Large-scale wind projects are being installed across the country and around the world. These projects use large turbines and are installed on a scale that allows for the power to be priced competitively. Smaller turbines have been used for rural generation applications in the state and have been shown to be rugged and reliable. For Railbelt applications, larger turbines and projects would be required to achieve economies of scale and subsequently competitive pricing. CEA and ML&P are studying a large wind project on Fire Island.

Acknowledgements

Representative Pete Kott, Speaker of the House
Representative John Harris
Senator Gene Therriault, Senate President
Senator Fred Dyson

Alaskan Command, Elmendorf AFB
Critical Infrastructure Protection (CIP)
Lt. Col. Bevan Orme
Julian Jensen
Alaska Conservation Foundation
Chris Rose
Alaska Natural Gas Development Authority (ANGDA)
Harold Heinze
Alaska Power Association (APA)
Eric Yould
T.C. Wilson
Chugach Electric Association (CEA)
Joe Griffith
John Cooley
Phil Steyer
Lee Thibert
Jeff Lipscomb
Denali Commission
Al Ewing
Homer Electric Association (HEA)
Myles Yerkes
Jim Cross
Matanuska Electric Association (MEA)
Tuckerman Babcock
Mike Pauley
Don Zoerb
Municipal Light & Power (Anchorage) (ML&P)
Jim Posey
Railbelt Energy Study (RES), Technical Working Group
Mark Fouts, Chair
Ron Moe, R.W. Beck
Seward Electric
Dave Calvert
Usibelli Coal Mine
Steve Denton

Glossary

Alaska Energy Authority (AEA) http://www.aidea.org/aea.htm
The Alaska Energy Authority was a state agency responsible for the administration of various state power projects and programs. The AEA was dissolved by State statute in 1993. Most of its rural programs moved to the Department of Community & Regional Affairs, Division of Energy. All existing projects, contracts, etc., remain with AEA under the guidance of the Alaska Industrial Development and Export Authority (AIDEA). Authority to construct or acquire new projects was repealed.

Alaska Electric Generation and Transmission Cooperative (AEG&T)
Created in 1984 by Homer Electric Association and Matanuska Electric Association. AEG&T's mission is to assist statewide development of financially viable and environmentally sound energy systems that are safe, reliable, and efficient.

Alaska Industrial Development and Export Authority (AIDEA) http://www.aidea.org
The Alaska Industrial Development and Export Authority (AIDEA) is a State agency that assumed the functions of the dissolved AEA, with AIDEA's Board of Directors replacing the AEA Board.

Alaska Power Association (APA) http://www.areca.org
Statewide trade association for electric cooperatives. Formerly known as the Alaska Rural Electric Cooperative Association (ARECA).

Capacity
The maximum amount of power, normally expressed in megawatts, that a given system or subsystem can carry or produce at a particular moment, and is typically used to represent the real production capability rating of a generation or transmission system.

Cogeneration
The simultaneous production of power and thermal energy, such as burning natural gas to produce electricity and using the heat produced to create steam for industrial use.

Combined Cycle (CC)
An electric generating technology in which additional electricity is produced from otherwise lost waste heat exiting from the gas turbines.

Combustion Turbine (CT)
A machine that generates rotary mechanical power from the energy of a stream of fluid.

Cooperative
A group organized to supply electricity to a specific area; a cooperatively owned electric utility. A non-profit utility owned by its members.

Demand
The rate, expressed in megawatts (MW), at which electric energy is delivered to or by a system, part of a system, or piece of equipment at a given instant, or averaged over a designated period of time.

Distributed Generation
This term generally refers to small-scale energy generation spread among several producers, but it can also refer broadly to any type of energy generation that is spread among multiple producers. Distributed generation is most commonly used to insure that sufficient energy is available to meet peak demand. It may also be used as part of a fuels diversity program.

Distribution Line
A power line which delivers electricity throughout urban and rural areas. Typically between 2,300 and 25,000 volts.

Generation
The process of producing electric energy by transforming other forms of energy. It also refers to the amount of electric energy produced, expressed in megawatt-hours (MWh).

Generation and Transmission Company (G&T)
Term for a company that provides both energy production and facilities for transmitting energy to wholesale customers.

Gigawatt (GW)
A unit of measure equal to one billion watts or one thousand megawatts.

Integrated Resource Planning (IRP)
This term refers to a planning method that takes into account all resources available to or required to meet supply needs within an area or region that produce to the lowest possible cost.

Intertie
A tie permitting a flow of energy between the facilities of two electric systems.

Investor-Owned Utility
A utility owned privately (or by stockholders) and operated as a for-profit company.

Kilovolt (kV)
A unit of measurement of electrical force of pressure equal to 1,000 volts.

Kilowatt (kW)
A unit of power equal to 1,000 watts.

Kilowatt-Hour (kWh)
The most commonly used electrical measurement equal to 1,000 watts for one hour.

Load
The moment-to-moment measurement of power requirement in the entire system.

Megawatt (MW)
One thousand kilowatts or one million watts.

Peak Load, Peak Demand
These two terms are used interchangeably to denote the maximum power requirement of a system at a given time, or the amount of power required to supply customers at times when need is greatest. They can refer either to the load at a given moment (e.g. a specific time of day) or to averaged load over a given period of time (e.g. a specific day or hour of the day).

Railbelt Energy Study (RES)
Five utilities commissioned a study on the Railbelt. The purpose of the study is to identify the location and type of generation asset that satisfies future growth within the Railbelt.

Regulatory Commission of Alaska (RCA) **http://www.state.ak.us/rca/**
Formerly known as the Alaska Public Utility Commission. The RCA is the State's regulatory body overseeing utilities.

Roadbelt
That part of Alaska that is road-accessible, but not connected to the Railbelt grid, like Glennallen.

Transmission Line
A set of conductors, insulators, supporting structures, and associated equipment used to move large quantities of power at high voltage.

Volt
The unit of electrical measurement, which is similar to "pressure", that pushes current through a conductor.

Watt
A unit of electrical measurement used to determine the rate of energy delivered at some point. Watts = Voltage x Amperes

APPENDIX A
Process and Appointments

The Energy Policy Task Force (EPTF) convened its first meeting on Tuesday, September 23, at the AIDEA/AEA boardroom in Anchorage.

The Task Force consists of nine members. Chosen as proscribed in HCR 21, no legislators could serve, no utility could have more than one representative and at least one member on the EPTF was to be from a non-Railbelt electrical utility.

Governor Frank Murkowski appointed **Rick Eckert of Homer**, Interim General Manager of Homer Electric Association and **Wayne Carmony of Wasilla**, General Manager of Matanuska Electric Association.

Speaker of the House Pete Kott appointed **former Lt. Governor H.A. "Red" Boucher of Anchorage**, a board member of Chugach Electric Association and **Dave Carlson of Petersburg**, Intertie Coordinator of the Southeast Conference.

Senate President Gene Therriault appointed **Steve Haagenson of Fairbanks**, President and CEO of Golden Valley Electric Association and **Robert Wilkinson of Glennallen**, Chief Executive Officer of Copper Valley Electric Association. In accordance with the language of HCR21, **Meera Kohler of Anchorage,** President and CEO of Alaska Village Electric Cooperative, was also selected by the Senate President from a list of three names submitted by the minority leaders.

The Alaska Energy Authority (AEA) member is **Mike Barry of Anchorage**, Chairman of the AIDEA/AEA Board, who was also elected Chair of the EPTF. The Department of Revenue member is **Tom Boutin of Juneau**, Deputy Commissioner of Revenue.

Becky Gay, staff to **Representative John Harris**, provided coordination and legislative staff support through the Joint Leadership Offices of **Speaker of the House Pete Kott** and **Senate President Gene Therriault.** Bernie Smith, Project Manager at AIDEA/AEA and a former Regulatory Commissioner, provided research and regulatory guidance.

The Task Force was headquartered at AIDEA/AEA and held most of its meetings in Anchorage. The Task Force met every two weeks, with presentations by the all of the Railbelt utilities and others setting the stage for discussion. Interested public was encouraged to make both written and public comments. Presentations by federal and state agencies were incorporated. Long term was defined to be 20 years or more for purposes of this report. The Railbelt Energy Study (RES) currently being undertaken by five utilities has basic information that was received by the Task Force and will be completed early in 2004. A website was provided and kept current by AIDEA/AEA at www.aidea.org/EnergyTaskForce.htm.

Alaska Energy Policy Task Force Members

Chair: Mike Barry, Chairman of the Board
AIDEA/Alaska Energy Authority (AEA)
www.aidea.org

Vice Chair: H.A. Red Boucher, Alaska Wireless Technology
Board Member, Chugach Electric Association (CEA)
www.chugachelectric.com

Tom Boutin, Deputy Commissioner
State of Alaska-Department of Revenue
www.state.ak.us

Dave Carlson, Intertie Coordinator
Southeast Conference
www.seconference.org

Wayne Carmony, General Manager
Matanuska Electric Association (MEA)
www.matanuska.com

Rick Eckert, General Manager
Homer Electric Association (HEA)
www.homerelectric.com

Steve Haagenson, President/CEO
Golden Valley Electric Association (GVEA)
www.gvea.com

Meera Kohler, President/CEO
Alaska Village Electric Cooperative (AVEC)
www.avec.org

Robert Wilkinson, CEO
Copper Valley Electric Association (CVEA)
www.cvea.org

APPENDIX B

HCR 21 (Resolve 24)

SENATE CS FOR CS FOR HOUSE CONCURRENT RESOLUTION NO. 21(FIN)

Relating to establishing the Alaska Energy Policy Task Force.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS an adequate, reliable, reasonably priced, and safe supply of electric energy is a basic necessity; and

WHEREAS other infrastructure elements such as water, wastewater, transportation, and telecommunications systems are dependent on an adequate, reliable, reasonably priced, and safe supply of energy; and

WHEREAS meaningful economic development and technological advancement cannot occur in Alaska without an adequate, reliable, safe, and reasonably priced energy supply; and

WHEREAS over 85 percent of the state's electrical consumption occurs in the Railbelt; and

WHEREAS the needs of the non-Railbelt areas of the state include more electrical infrastructure and less expensive power; and

WHEREAS it would be beneficial to examine how electricity is generated, transmitted, and distributed in Alaska in order to meet the state's existing and future electrical needs in the safest and most efficient manner; and

WHEREAS the financial resources of the state are limited;

BE IT RESOLVED that the Alaska State Legislature establishes the Alaska Energy Policy Task Force to review and analyze the state's current and long-term energy needs; and be it

FURTHER RESOLVED that the task force shall consider how best to incorporate state-owned Railbelt energy assets as part of the solution for the Railbelt's current and long-term electrical needs; and be it

FURTHER RESOLVED that the task force shall also address those elements of the state's long-term energy needs that can be solved through action on the part of industry, government, or both industry and government working together, such as through pooling and integrated resource planning; and be it

FURTHER RESOLVED that the task force shall develop a long-term energy plan for Alaska that will efficiently enhance the state's economic future; and be it

FURTHER RESOLVED that the task force shall be composed of nine members as follows:

(1) one member from the directors of the Alaska Energy Authority, selected by the directors;

(2) the commissioner of revenue or the commissioner's designee;

(3) two members chosen by the governor who are not members of the legislature;

(4) three members chosen by the president of the senate who are not members of the legislature, one of whom must be from a list of three names proposed jointly by the minority leaders of the house of representatives and the senate, and the appointment from the list shall be made after consultation with the speaker of the house of representatives;

(5) two members chosen by the speaker of the house of representatives who are not members of the legislature; and be it

FURTHER RESOLVED that members shall be chosen in such a manner that a utility will not have more than one representative on the task force, but at least one member will be from a Railbelt electrical utility, and at least one member will be from a non-Railbelt electrical utility; and be it

FURTHER RESOLVED that the members of the task force shall select a chair from among themselves; and be it

FURTHER RESOLVED that task force members who are not state employees are entitled to per diem and travel expenses as for members of boards and commissions under AS 39.20.180; and be it

FURTHER RESOLVED that a staff member and other resources shall be provided to the task force, as necessary, by the legislature; and be it

FURTHER RESOLVED that the task force shall submit a report of its findings regarding a Railbelt energy plan to the legislature by December 31, 2003, and may make any interim reports on Railbelt energy issues it considers advisable; and be it

FURTHER RESOLVED that the task force shall submit reports of its finding regarding energy plans for areas of the state other than the Railbelt to the legislature by March 31, 2004, and may make any interim reports it considers advisable; and be it

FURTHER RESOLVED that the task force is terminated at 11:59 p.m. on April 15, 2004.

APPENDIX C
Current Railbelt Projects

- **Eklutna transmission line** replacement project: This $19,300,000 project is in the design phase.

- **Alaska Intertie Extension**: This project will upgrade and extend the Anchorage to Fairbanks power transmission Intertie to the Teeland substation.

- **Alaska Intertie**: Maintenance repair/replacements are required to address foundations problems and replace Static VAR Compensation (SVC) equipment. In addition, a long-term fix to the uneven snow-loading events should be evaluated.

- **Cooper Lake Hydro re-licensing**: Chugach's Cooper Lake Hydro, commissioned in the 1950's, was recently overhauled and upgraded and is currently in the process of a FERC license renewal application.

- **ML&P** is acquiring property for Plant III.

- **MEA** is preparing thermal generation plant site at Hollywood Road.

APPENDIX D
Long-term Railbelt Projects

- **Emma Creek Energy Project**: Usibelli Coal Mine Inc. has proposed a $421 million, 200MW power plant at its mine near Healy #2.
- **GVEA's North Pole Expansion (NPE) project**: Using combined-cycle technology to add a 57MW highly efficient gas combustion turbine at the existing 120MW North Pole power plant site (built in 1975), which is GVEA's largest generating facility. The new NPE project would entail installing a 43MW gas turbine equipped with a waste heat boiler on its exhaust stack. The boiler would produce steam to power a 14MW steam turbine.
- **Southern Intertie**: Proposed new construction of a 62-mile segment to increase reliability and to provide redundancy to the Quartz Creek transmission line.
- **Chugach**: Chugach's five year construction improvement plan includes a new South Anchorage bulk transmission station, and a 138kV transmission loop that ties the new Bulk station with International and University substations. In addition, load growth in the Airport and South-East Anchorage necessitate the addition of two new distribution substations. Chugach is currently performing an Integrated Resource Plan (IRP) to identify generation and transmission requirements over the next 25 years. Chugach is also looking at development of a wind-farm on Fire Island.
- **ML&P**: Plans for the long term future include developing a robust grid, integrated resource planning, reliable sources of natural gas, developing wind power and green pricing.
- **Bradley Lake Repairs**: Repair and upgrade of the Bradley Lake Hydroelectric Project's governor.
- **HCCP**: Healy Clean Coal Project (HCCP) retrofit.
- **Donlin Creek Exploration**: Construction of power supply for the potential Donlin Creek Mine in Western Alaska, Calista region and/or Bethel area.
- **Military Power Upgrades**: Retrofit of the military's various coal generation plants, in the Fairbanks area. A Greater Fairbanks Regional Energy Study of Military Installations for long-term heat and power at Ft. Wainwright, Clear, Eielson AFB, and Ft. Greeley. Missile defense system offers opportunities and requirements. Ft. Richardson and Elmendorf AFB are undertaking privatization efforts.
- **Copper Valley Intertie**: This Intertie has been proposed to link the Copper Valley area to the Railbelt Intertie system.

APPENDIX E
Current Energy Resources

Source: Railbelt Energy Study (RES) 2003 draft

2002 GENERATION

Thermal Resources

Owner	Name	Technology Category	Maximum Capacity (MW))
CEA	Beluga Unit 1	CT	19.6
CEA	Beluga Unit 2	CT	19.6
CEA	Beluga Unit 3	CT	64.8
CEA	Beluga Unit 5	CT	68.7
CEA	Beluga Unit 6/8	CC	109.0
CEA	Beluga Unit 7/8	CC	106.6
CEA	Bernice Lake 2	CT	19.0
CEA	Bernice Lake 3	CT	26.0
CEA	Bernice Lake 4	CT	22.5
CEA	International 1	CT	14.1
CEA	International 2	CT	14.1
CEA	International 3	CT	18.5
GVEA (Contract)	Aurora Chena	Steam	23.5
GVEA	Healy 1	Steam	25.0
GVEA	North Pole 1	CT	60.5
GVEA	North Pole 2	CT	60.5
HEA	Nikiski	CT	46.5
ML&P	ML&P Plant1 Unit 1	CT	16.2
ML&P	ML&P Plant1 Unit 2	CT	16.2
ML&P	ML&P Plant1 Unit 3	CT	19.5
ML&P	ML&P Plant1 Unit 4	CT	33.6
ML&P	ML&P Plant2 Unit 5&6 CC	CC	49.6
ML&P	ML&P Plant2 Unit 7&6 CC	CC	107.8
ML&P	ML&P Plant2 Unit 8	CT	85.0

CT = Combustion Turbine
CC= Combined Cycle

Hydro Resources

Name	Maximum Capacity (MW)
Bradley Lake	120
Cooper Lake	20
Eklutna	40

APPENDIX E, cont.

Current Energy Resources

Source: Railbelt Energy Study (RES) 11/2003 draft

2002 LOAD

	2002 Peak Load (MW)				
GVEA	CEA	ML&P	MEA	HEA	SES
179	227	145	114	95	10

The electrical needs of the Railbelt are served by six utilities; four cooperatives and two municipal utilities. Golden Valley Electric Association (GVEA), Chugach Electric Association (CEA), Matanuska Electric Association (MEA), Homer Electric Association (HEA), Anchorage Municipal Light & Power (ML&P) and City of Seward Electric System (SES).

2002 Transmission

Major Railbelt Transmission Lines

Name	From	To	Pole Miles	Capacity (kV)	Limit (MW)	Owned by	Operated by
Fairbanks	Fairbanks	Healy	103.2	138		GVEA	GVEA
Northern Intertie	Fairbanks	Healy	97	230		GVEA	GVEA
Alaska Intertie	Healy	Willow	170	345	75	AEA	IOC
Southern Intertie	Anchorage	Quartz Creek	90.4	115	70	CEA	CEA
Kenai Peninsula	Quartz Creek	Soldotna	~ 300	115		HEA	CEA
	Soldotna	Bradley Junction		115		HEA	CEA
	Bradley Junction	Homer		115		HEA	CEA
	Soldotna	Homer		115		HEA	CEA

The Alaska Intertie includes a 170-mile, 345 kV transmission line between Willow and Healy and voltage control devices at Teeland, Healy and Fairbanks. The line was build with State grant funds, went into operation in 1985 and is operated at 138 kV. All of the operating and maintenance costs of the Intertie are paid for by the utilities (83.5% from energy transfers and 16.5% from reserve sharing).

The Intertie Operating Committee (IOC), set up by the Intertie Agreement among AEA, GVEA, CEA, ML&P and AEG&T (MEA & HEA), oversees the operation and maintenance of the line. The current agreement does not provide a mechanism for financing capital repairs or improvements to the line. Certain repairs have been postponed for a lack of financing mechanism.

Chugach's single 115 kV transmission line, which has a stability-limited capacity of 75 MW, connects the Anchorage and Kenai areas. This line is over 50 years old and will require significant rebuilding to keep it in service. The limited capacity of these single lines limits the amount of generating reserves that may be shared between areas of the Railbelt.

GVEA recently completed construction of and energized the Battery Energy Storage System (BESS) and the Northern Intertie (a second line between Healy and Fairbanks) which reduced line losses, increased the transfer capacity and improved reliability. The line is rated at 230 kV and operates at 138 kV. This would allow energy from HCCP and GVEA's Unit 1, as well as energy transfers from Anchorage, to be simultaneously transferred to Fairbanks.